Project 52

Substudy 2 - 13 - 66

PHYSICAL HEALTH

THE CHRONIC DRUNKENNESS OFFENDER

Chapter XII

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Alcoholism and Drug Addiction
Research Foundation,
24 Harbord Street,
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THE CHRONIC DRUNKENNESS OFFENDER

CHAPTER XII

PHYSICAL HEALTH

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PHYSICAL HEALTH

This study reports the medical findings on a group of men called chronic drunkenness offenders. By definition the C.D.O. is a person who has been repeatedly arrested and convicted for public intoxication. His present way of life is the product (at least in part) of his use of alcohol, which in turn contributes to his maintaining this pattern of existence. The C.D.O. is usually not only a Skid Row habitué, but also primarily a wine drinker.

The Sample

Two hundred and eighty subjects were randomly selected from drunkenness offenders with at least 3 convictions within the year, who were serving sentences in the Don Jail at the time they were drawn for the sample. Of these, 227 were included in the final sample. The other 53 men were not included due to: refusals (38 men), transfer to other custodial centres (2 men), transfer to T.B. sanatorium (1 man), payment of fines (11 men), and death (1 man).[1]

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[1] A comparison of means test was done with respect to the age, duration of heavy drinking, number of convictions in past 6 years, and whether morning drink occurs. They all showed no significant difference between the drop-outs and the sample.

Table XII - 1 presents the age distribution of the sample of 227 subjects. It indicates that the C.D.O.s were predominantly middle-aged or older; more than two-thirds of them were in the 36 to 55 year range.

TABLE XII - 1

AGE DISTRIBUTION

Age	Number	Per Cent
21 to 25	1	0.4
26 to 30	12	5.3
31 to 35	21	9.3
36 to 40	39	17.2
41 to 45	41	18.1
46 to 50	35	15.4
51 to 55	39	17.2
56 to 60	17	7.5
61 to 65	15	6.6
66 to 70	3	1.3
71 to 75	2	0.9
76 and over	2	0.9
Total	227	100.1

Mean - 46.17 years

Median - 45.44 years

Standard Deviation - 10.41 years

Table XII - 2 presents the birthplace of the subjects by country and by province in the case of the Canadian-born. It shows that over three-quarters of the men were born in Canada. The largest non-Canadian group came from the British Isles (11.9%), while the largest regional Canadian group is non-Toronto, Ontario-borns (31.7%).

TABLE XII - 2

BIRTHPLACE

A. Country of Birth			B. Province of Birth (Canadian-born)		
Country	N	%	Province	N	%
Canada	176	77.5	Newfoundland	7	3.1
England and Wales	4	1.8	Nova Scotia	22	9.3
Scotland	16	7.0	P.E.I.	5	2.2
Ireland	7	3.1	New Brunswick	11	4.8
U.S.A.	6	2.6	Quebec	11	4.8
Scandinavia	2	0.9	Ontario (Toronto)	42	18.5
			" (other)	72	31.7
Poland	4	1.8	Prairies	6	2.6
Others	4	1.8	Not answered or non-Canadian	51	22.9
Not answered	8	3.5			
Total	227	100.0	Total	227	99.9

Table XII - 3 presents the total number of convictions for public intoxication by the men in our sample over a period of 6 years prior to the study. It should be noted that this represents a minimum figure, since it includes only convictions that occurred in Toronto over this period. It is known that some of this population are nomadic, particularly in the summer months. This information is of direct relevance to the medical enquiry since it reveals the fact that many of these men spend a considerable amount of time each year in the protective environment of the jail or reformatory.

TABLE XII - 3

NUMBER OF DRUNK CONVICTIONS IN PAST SIX YEARS

Number of Convictions	N	%
3 to 5	7	3.1
6 to 10	19	8.4
11 to 15	34	15.0
16 to 20	32	14.1
21 to 25	19	8.4
26 to 30	31	13.7
31 to 35	20	8.8
36 to 40	18	7.9
41 and over	10	4.4
N.A.	37	16.3
Total	227	100.1

Mean - 22.6

Median - 22.3

Standard deviation - 11

The duration of both heavy drinking and morning drinking is presented in Table XII - 4. Both items of information are derived from the men in interviews, but their answers regarding the time at which these behaviours began were corrected where more reliable information from records indicated faulty recall.

"Morning drinking" refers to the practice of consuming alcoholic beverages first thing in the morning and is considered a symptom of alcoholism.

TABLE XII - 4

DURATION OF SELECTED SYMPTOMATIC DRINKING

No. of Years	Heavy Drinking		Morning Drinking	
	N	%	N	%
Less than one year	-	-	1	0.4
1 to 5	8	3.5	21	9.3
6 to 10	26	11.5	25	11.0
11 to 15	41	18.1	39	17.2
16 to 20	52	22.9	29	12.8
21 to 25	45	19.8	15	6.6
26 to 30	20	8.8	11	4.8
31 to 35	10	4.4	2	0.9
36 to 40	8	3.5	2	0.9
41 and over	4	1.8	3	1.3
N.A.	8	3.5	41	18.1
Never experienced	5	2.2	38	16.7
Total	227	100.0	227	100.0

Mean	18.7 years	15.0 years
Median	18.4 years	14.5 years
Standard deviation	9.1 years	8.9 years

Method

Data on these 227 men were collected by a team of investigators including a psychiatrist, a medical doctor, a team of psychologists and a team of interviewers. The medical data were obtained through physical examinations, medical histories, hospital records, veterans' records, laboratory tests, and x-rays. Laboratory tests included urinalysis, hemoglobin, white blood count, blood smear and differential, cephalin-cholesterol flocculation, thymol turbidity, venereal disease research laboratories, and electrocardiograms.

A special coding form was constructed so that the data could be tabulated and analyzed on I.B.M. cards, where relevant and processable items were organized into classes or scales.

The medical findings of 4 studies are used extensively for comparisons in this report. None of the populations studied is made up exclusively of Skid Row alcoholics but all share some of the salient characteristics of our C.D.O. sample. Unfortunately, comparison of all 4 studies with ours is not possible in respect to all of the items reported, either because these items are not included in their observations or different systems of classification are used.

1. In the Chicago Skid Row studies, carried out in 1958 and reported by Bogue in 1963 (6), an interview schedule was administered to a probability sample of 613 respondents representing the universe of 12,000 to 13,000 homeless men living in pre-defined Skid Row districts. Since only 32.5 per cent of the Chicago sample were found to be either "alcoholic derelicts" or "heavy drinkers", discrepancies between their medical findings and ours may be indicative of differences in health between the alcoholic and the non-alcoholic populations of Skid Row. However, the differences between the findings of the two studies may also be due to the methods of data-gathering. In the Chicago study the information was based entirely on the respondents' answers to the medical questions on the interview schedule. Although these questions were taken from the U.S. Public Health Department's National Health Survey, and the responses were classified and interpreted by a physician, the data are obviously not as reliable or extensive as medical history information derived by a physician directly from the subjects and checked and supplemented by physical examinations, laboratory tests, and hospital records.

2. The medical information in the Minneapolis study of homeless men, conducted in 1953-4 and reported by Brantner in 1958 (7), was based on the medical examination of 466 consecutive admissions to a Salvation Army Men's Social Service Center. The method of securing the data came close to resembling our study in that one physician did a physical examination, obtained a medical history from each man, and had blood and urine tests, as well as x-rays, carried out. No figures on alcohol consumption or addiction are reported for the Minneapolis sample, although a wide range of other bio-social characteristics are described.

Brantner asserts at one point that "excessive use of alcohol is one of the major characteristics of this group" (7, p 85), but in light of the other studies of Skid Row populations which have listed frequencies for drinking behaviours, we can assume that any sample of homeless men who patronize an institution dispensing food and shelter, will include many who are not alcoholics. The old men of Skid Row are probably underrepresented in this sample (as Brantner points out), since men receiving relief payments, Old Age assistance, and pensions, are excluded. It is not surprising that the health picture is more favourable than among the Chicago sample drawn from men in all types of Skid Row living accommodations.

3. The study of 287 casual labourers currently unemployed or only partially employed, carried out in Duluth in 1931 and reported by Hansen et al. in 1932 (22), was also based on medical examination. Physical examinations were conducted by several different physicians under the direction of one supervising physician; medical histories were obtained by non-medical persons; blood and urine samples and certain routine tests and measures were the responsibility of a nurse. The group is clearly a Skid Row sample, since the men are virtually all resident in hostels and missions, but during the Depression this population probably included many men whose motivation and health would enable them to avoid Skid Row in more prosperous times. In regard to their drinking habits, we are told only that "67 per cent of these men used, or had used, alcohol" (22, p.29).

4. The group of 2,878 males studied at the Saul Clinic in Philadelphia between June, 1946 and April, 1949 (47), is quite a different population than the subjects of the other three studies. Since this is a medically-oriented, in-patient alcoholism clinic, the subjects are presumably alcoholics and in this respect at least, resemble chronic drunkenness offenders. But the sample appears to be unrepresentative of alcoholics in general in that fairly

serious symptoms were a condition for admission to the clinic. We are told that: "The Saul Clinic has been primarily an in-patient clinic, designed for the treatment of the acute stages of alcoholism when the patient is genuinely sick, mentally, physically, spiritually" (47,p.3).

Data on the occupations of the Saul Clinic patients reveal that few, if any, of the patients are drawn from Skid Row. Over 50 per cent were in white collar occupations and only 2 to 3 per cent were classified as "labourers" or "unemployed" (47,p.14). The fact that 85 per cent of the patients were able to pay in full the charge of $65.00 to $78.00 for their 5-day stay (47,p.2), adds to the impression that most of them were not from the lower end of the social scale. Consequently, differences in the distribution of pathologies between the Saul Clinic study and the present study, may be interpreted as a difference between better-off alcoholics and Skid Row alcoholics.

The few additional studies of specific aspects of health that have been used for comparative purposes are listed in the bibliography. A search through the literature for comparable data revealed that morbidity information on chronic drunkenness offenders, on alcoholics, and even on the general population, is surprisingly meagre.

In the following discussion of the incidence of the more serious or more frequent pathologies found in the C.D.O. sample, the influence of age and of the number of years that the subjects have been engaged in heavy drinking will be tested. In order to determine which of these two variables is more closely related to specific pathologies, the influence of the duration of heavy drinking will be tested with age controlled. However, it should be kept in mind that it is impossible to eliminate the influence of heavy drinking, since all but 2.2 per cent of the men in the sample were, in fact, heavy drinkers; 94.3 per cent had been so for for more than 5 years.

The incidence of some disorders is conceivably affected by the amount of time the offender spends in jail. In discussing these disorders, the relationship of the frequency of the medical finding to the number of drunk convictions in the last 6 years, will be tested. The number of convictions is a measure of the time spent in jail in this period because: (1) the men are rarely able to avoid jail by paying fines, and (2) the average length of sentences increases with the number of convictions.

A. CARDIOVASCULAR SYSTEM

TABLE XII - 5

CARDIOVASCULAR: HEART DISEASE

Diagnosis	Number	Per Cent
Arteriosclerotic heart disease	14	6.2
Hypertension:		
Blood pressure 160/100 and over	14	6.2
Blood pressure 150/90 to 159/99	37	16.3
Rheumatic heart disease (Valvular damage)	2	0.9
Normal	150	66.1
Not answered	10	4.4
Total	227	100.1

Arteriosclerotic Heart Disease

As seen in Table XII - 5, 6.2 per cent of the subjects (14 in number) had arteriosclerotic heart disease, readily diagnosed by typical angina and supported by electrocardiograph evidence. This compared with a group of civil servants in Albany, who were found to have an incidence of 3.0 per cent arteriosclerotic heart disease or coronary heart disease (26). In findings from general medical practices in Great Britain, males aged 45 to 64 years of age had a rate of 1.7 per cent coronary heart disease (40). In the Chicago study of Skid Row inhabitants, the rate was 6.6 per cent (6). The Framingham study (based on the physical examination of some 4,969 men and women in a New England industrial city) showed a rate of 5.48 per cent for all age groups over a period of 6 years. In the older age group (45 to 64 years) a rate of 9.06 per cent was found (10).

The range in the various series is approximately 2 to 9 per cent and the 6.2 per cent found in our population falls between. It seems that the prevalence of arteriosclerotic heart disease in the chronic drunkenness offender group does not differ significantly from findings in other population groups.

Hypertension

The level of blood pressure to be used in deciding when an individual has hypertension is controversial, 160/100 being chosen as the value to be used in this investigation. The prevalence was 6.4 per cent (14 cases). The blood pressures with values of 150/90 were also separated, since this is a common level chosen by insurance companies to indicate borderline hypertension. This shows a rate of 16.3 per cent (37 cases).

Comparing this first figure (6.4%) with other studies, we find the Chicago Skid Row reports a finding of 6.6 per cent (6). White and Ibraham, in their serial estimate of an overall community rate, give a figure of 6.0 per cent (53). In the British General Practices study the finding was 1.5 per cent (41); in the Albany civil servant group hypertension was described in 13.2 per cent (26). The Minneapolis study of homeless men found a rate of 3.0 per cent (7), and the Canadian Sickness Survey reported 1.35 per cent for all age groups (13).

The data suggest that there is no striking difference between the prevalence of hypertension in other segments of the general population and that found among chronic drunkenness offenders. The rate may be higher in certain highly selected groups such as civil servants.

The relationship between age, duration of heavy drinking, and blood pressure, was analyzed. Ninety-four per cent of the men below the median age had normal blood pressures, compared to 78 per cent of the men above the median age. When age was controlled, the relationship of blood pressure to years of heavy drinking disappeared.

Looking at blood pressure and the number of drunkenness convictions in our sample over the past 6 years, we found no significant difference between those with the most convictions and those with the least. The time spent in jail in recent years apparently did not affect the probability of having normal blood pressure.

Rheumatic Heart Disease

Five of the subjects (2.2%) had a definite history of rheumatic fever, but there was no evidence of resulting

cardiac damage at the time of investigation. An additional 2 subjects (0.9%) had clinical evidence of valvular murmurs. Dawber and Kannel reported a prevalence in Framingham of all types of rheumatic heart disease of 2.5 per cent (10). It appears that the C.D.O.s do not differ significantly from the general population in this respect.

Additional Findings

Because of abnormal findings on examination, and to assist the diagnosis, electrocardiograms were performed on 15 subjects (6.6%). Eleven (4.8%) were found to be abnormal, showing patterns compatible with left ventricular hypertrophy or strain or arteriosclerotic heart disease. Most of these patterns were non-specific T-wave flattening. On physical examination, the cardiac apex was displaced to the left in 5 subjects. This was felt to be due to left ventricular enlargement.

TABLE XII - 6

CARDIOVASCULAR: MISCELLANEOUS FINDINGS

Diagnosis	Number	Per Cent
Abnormal:		
By physical examination;		
Arteriosclerosis obliterans	6	2.6
Varicose veins - mild to moderate	6	2.6
Varicose veins - marked	12	5.3
By electrocardiogram	11	4.8
Normal:		
By physical examination	188	82.8
By electrocardiogram	4	1.8
Total	227	99.9

Six cases (2.2%) had arteriosclerosis obliterans manifested by absent peripheral pulses and usually a history of some degree of intermittent claudication. In the British General Practices study peripheral arteriosclerosis was described in 0.54 per cent of patients (40).

Eighteen subjects (7.9%) of our group had significant varicosities in the lower extremities and 6 were considered to be of a mild to moderate degree. In the Minneapolis study 4.3 per cent of the men examined showed varicose veins (7), while the Chicago group reported 5.4 per cent significant varicosities of the extremities (6). The incidence of marked varicosities in our group, which probably require surgical therapy, was almost identical with the above-mentioned groups.

Two hundred and five of the subjects (91.1%) had completely normal pulses. The balance was made up of 5 subjects (2.2%) with irregular pulses, probably due to frequent extra systoles; one example (0.4%) of auricular fibrillation; 4 cases (1.8%) had bradycardia with pulse less than 50 per minute; and 10 (4.4%) had tachycardia, where the rate was over 100 per minute.

Conclusion

In summary, the cardiovascular findings such as arteriosclerotic heart disease and hypertension, are close to those one finds in other populations.

Rheumatic heart disease of significant involvement was not found. Varicose veins occurred in only slightly higher frequencies than in other studies.

It is therefore concluded that hypertension and arteriosclerotic heart disease incidences are not significantly altered by the mode of life of the chronic drunkenness offender.

B. PULMONARY DISEASES

Tuberculosis

It should be stressed that it was impossible to obtain complete records and that the known cases of tuberculosis by history and examination represent minimal indices. The extent of the underestimate was shown by the chest x-rays, which yielded significant evidence of tuberculosis in 15 per cent of the total cases, or 16.8 per cent of the cases in which x-rays were available, which is almost twice the confirmed incidence. Unusually high rates of tuberculosis have been found among Skid Row men in other cities, such as New York (8) and Minneapolis (29). There is also some evidence that tuberculosis is more prevalent among alcoholics in general (2, p.25).

TABLE XII - 7

PULMONARY DISEASES

Diagnosis	Number	Per Cent
Tuberculosis (proven - past)	20	8.8
Tuberculosis (current suspect on examination)[a]	2	0.9
Pleurisy (previously)	31	13.7
Chronic bronchitis[a]	20	8.8
Pulmonary emphysema[a]	8	3.5
Bronchial asthma[a]	3	1.3
Bronchiectasis[a]	2	0.9
Unclassified	12	5.3
Normal (no evidence - past or present)	128	56.4
N.A.	1	0.4
Total	227	100.0

[a]Current obvious chest diseases total 35 cases or 15.4 per cent.

This high incidence of tuberculosis among the Skid Row population indicates a profound public health problem. In our group of chronic drunkenness offenders, the data show mainly old arrested-activity cases. However, their histories clearly indicate that they left hospital before completion of therapy and their mode of life predisposed them to the breakdown of disease (25).

A comparison of sanatorium-hospitalized cases in the sample and the general population of Ontario (Table XII - 8) revealed that the men in the sample are 4 times more likely to have been in sanatoria for tuberculosis than the general population of Ontario (15).

TABLE XII - 8

RATE OF HOSPITALIZATION IN SANATORIA

Ontario (1948 - 61)		C. D. O. Sample	
Rate/1,000	Rate/227	Rate/1,000	Rate/227
0.82	0.18	3.46	0.79

A test of the relationship between the incidence of confirmed tuberculosis and the subjects' current age showed that the rate increased with each 10-year age-interval.

The relationship between tuberculosis and years of heavy drinking was less clear-cut: 6.1 per cent of the men who had been drinking heavily for 10 years or less had had T.B., but the proportion decreased to 3.3 per cent with 11 - 20 years of heavy drinking and increased to 16.3 per cent with more than 20 years of heavy drinking.

Table XII - 9 indicates that both age and the duration of heavy drinking influence the incidence of tuberculosis,but the numbers are too small to justify tests of significance or conclusions as to which plays the larger role.

TABLE XII - 9

PER CENT WITH CONFIRMED TUBERCULOSIS (PAST AND PRESENT) BY CURRENT AGE AND YEARS OF HEAVY DRINKING

Age	Years of Heavy Drinking		
	1 - 15 Years	Over 15 Years	Total
21 to 45 years	1.7% (1)	9.4% (5)	5.4% (6)
Over 45 years	5.1% (2)	19.7% (13)	14.3% (15)
Total	3.1% (3)	15.1% (18)	9.8% (21)[a]

[a]N.A. = 1

Because tuberculosis is so prevalent in this population, an ancillary study of chronic drunkenness offenders and inmates serving sentences for other offences was carried out and will be reported in detail separately (43). For this study T.B. skin tests (an index of previous infection) and chest x-rays of both groups were compared. Eighty per cent of the chronic drunkenness offenders were positive on the skin tests, as compared to 33.3 per cent of the other offender group, and 20 per cent of the general public.

Since chronic drunkenness offenders are not physically separated from other prisoners (most of whom are in the younger age groups), there is a very considerable danger of susceptible individuals becoming infected. Hence, the jail may well be a source of infection for tuberculosis within the community.

Other Pulmonary Diseases

Table XII - 7 enumerated other pulmonary findings. Most cases of pleurisy occurred in the past; occasionally it was of recent origin. Those with chronic bronchitis usually had scattered ronchi on examination.

The Chicago Skid Row study revealed an incidence of 3.4 per cent in this category (6); the higher incidence of 8.8 per cent in our study may represent an effect of heavy drinking. Perhaps men in Skid Row who do not drink excessively would have a lower incidence.

Pulmonary emphysema was found in 3.5 per cent of our sample, and these men usually had bronchitis as well, which might indicate a difference between Skid Row subjects and C.D.O.s. However, only one of the cases of pulmonary emphysema was clinically severe.

Bronchial asthma was found in 1.3 per cent. This was quiescent in two of the cases.

Miscellaneous pulmonary disease was found in 5.3 per cent of the sample; in the Chicago Skid Row study a comparable incidence of 5.0 per cent was reported (6).

The incidence of other (than tuberculosis) pulmonary disease was found to increase with both age and years of drinking, but Table XII - 10 indicates that the duration of heavy drinking has the greater influence. This is accounted for largely by the younger men, among whom the incidence of other pulmonary disease is significantly related to years of drinking. ($P < .01$). The relationship between years of drinking and other pulmonary disease among the older men runs in the same direction but is below the level of statistical significance.

TABLE XII - 10

PER CENT WITH OTHER PULMONARY DISEASE BY CURRENT AGE AND YEARS OF HEAVY DRINKING

Age	Years of Heavy Drinking		
	1 - 15 Years	Over 15 Years	Total
21 to 45 years	18.6% (11)	46.1% (24)	31.5% (35)
Over 45 years	33.3% (13)	40.3% (27)	37.7% (40)
Total	24.5% (24)	42.8% (51)	34.6% (75)[a]

[a] N.A. = 1

Chest X-Rays

There is an x-ray machine in the Don Jail and the inmates usually have chest x-rays during the time they are serving their sentences (at least once a year). The films are reviewed by experts in tuberculosis.

TABLE XII - 11

CHEST X-RAY

Finding	Number	Per Cent
Significant - tuberculosis	34	15.0
Significant - non-tuberculosis (pneumonitis, possible carcinoma, etc.)	11	4.8
Calcifications	71	31.3
Other minor lung changes (scarring, pleurisy, etc.)	17	7.5
Cardiovascular abnormalities	3	1.3
Normal	66	29.1
No x-ray available	25	11.0
Total	227	100.0

Conclusion

The advent of antibiotics during the 1940's has probably prevented many of our subjects from dying of previously lethal lobar pneumonia, which was prevalent among chronic alcoholics. Crowded living quarters, outdoor exposure, poor clothing, and malnutrition probably predispose the drunkenness offender to frequent respiratory infections. The high incidence of chronic bronchitis and emphysema could be a consequence of lack of proper care and of neglect of respiratory infections. Another factor may be the heavy cigarette smoking that almost all indulge in.

The prominence of pulmonary disease in our group is in keeping with the high frequency of diseases of the respiratory system recorded as being responsible for the deaths of 109 chronic drunkenness offenders reviewed in the mortality survey in conjunction with this study, (Chapter XIII).

C. UPPER RESPIRATORY DISEASES

TABLE XII - 12

UPPER RESPIRATORY DISEASES

Diagnosis	Number	Per Cent
Chronic sinusitis	15	6.6
Chronic laryngitis	7	3.1
Carcinoma of larynx	1	0.4
Others	15	6.7
Normal	185	81.5
N.A.	4	1.8
Total	227	100.1

The incidence of upper respiratory disease is presented in Table XII - 12.

The subjects with chronic laryngitis had "husky", hoarse voices, which might be associated with both excessive drinking and heavy smoking.

The Chicago Skid Row study showed an incidence of 12.3% of subjects with sinusitis (6), compared with 6.1 per cent in the present study.

D. DISEASES OF THE EAR

TABLE XII - 13

DISEASES OF THE EAR

Diagnosis	Number	Per Cent
Otitis media (old)	17	7.5
Vestibular disturbance	2	0.9
Other	2	0.9
N.A.	1	0.4
Normal	205	90.3
Total	227	100.0

Perforated or retracted drums, indicative of old otitis media, were found in 7.5 per cent of our group. In comparison, this was found in 1.9 per cent of the Minneapolis population (7) and in 1.8 per cent of the Duluth (22).

TABLE XII - 14

HEARING IMPAIRMENT

Diagnosis	Number	Per Cent
Marked deafness	7	3.1
Mild deafness	6	2.6
Normal hearing	214	94.2
Total	227	99.9

As seen in Table XII - 14, hearing was impaired in 5.7 per cent of the sample. Comparable findings in Skid Row were reported in the Minneapolis study (7) with 4.7 per cent, and in the Duluth general labourers (22) 7.2 per cent. The self-reported hearing impairments in the Chicago Skid Row study (6) 12.0 per cent, is a considerably higher figure.

E. DISEASES OF THE EYE

Table XII - 15 shows a total incidence of cataracts and corneal opacities of 3.1 per cent, compared with 2.4 per cent found in the Minneapolis study (7). The retinal changes were primarily those of significant arteriosclerosis with arterial narrowing and tortuosity of arterioles.

The important disabilities were cataracts, corneal opacities, optic nerve degeneration and retinal disease.

TABLE XII - 15

DISEASES OF THE EYE

Diagnosis	Number	Per Cent
Arcus senilis	5	2.2
Cataracts	4	1.8
Corneal opacities	3	1.3
Optic nerve degeneration	1	0.4
Retinal changes	12	5.3
Other	12	5.3
Normal	190	83.7
N.A.	-	-
Total	227	100.0

The majority of those with visual defects (Table XII - 16) lacked proper glasses or any at all. Many had lost or broken their glasses while drinking or else stated that they could not afford to buy them.

TABLE XII - 16

VISION

Diagnosis	Number	Per Cent
Mild impairment, 20/30 - 20/70	41	18.1
Severe impairment, 20/100 or worse	10	4.4
Normal	176	77.5
N.A.	-	-
Total	227	100.0

Defective vision was detected in 29.8 per cent of the Minneapolis sample (7), in a surprising 66.0 per cent of the Duluth labourers (22), and in 0.7 per cent of those in the Chicago Skid Row study (6); compared with 22.5 per cent in the present study.

Differences between the studies in the methods of gathering information and in the definitions of impairment may account for the wide variation.

F. CENTRAL NERVOUS SYSTEM DISORDERS

There are many varieties of lesions of the central nervous system and it was found difficult to make specific diagnoses in all instances. Other studies of Skid Row populations gave little information on such disorders.

Tables XII - 17 to XII - 20 list findings based on recent examinations or documented hospital records.

TABLE XII - 17

PERIPHERAL NEURONAL DISORDERS

Diagnosis	Number	Per Cent
Peripheral neuritis	3	1.3
Wrist drop	2	0.9
Absent reflexes	12	5.3
Paresthesia	11	4.8
Sensory impairment	3	1.3
Miscellaneous	3	1.3
Normal	188	82.8
N.A.	5	2.2
Total	227	99.9

Peripheral Neuronal

No abnormalities were found in 82.8 per cent of the sample population, while 14.9 per cent had lesions of the peripheral nervous system. A definite diagnosis of peripheral neuritis was made in 1.3 per cent of the subjects. Most of the remaining findings could be manifestations of peripheral neuritis. The absent reflexes were almost all either a combination of absent knee and ankle jerks or absent ankle jerks alone.

Paresthesia was described as tingling and burning of the legs. This was very similar to that found in the Hong Kong prisoner-of-war survey (1). The sensory impairment included absent vibration sense or significant reduction of superficial pain appreciation. Miscellaneous items represent old injury or poliomyelitis of the spinal cord with residual defects. Thus, excluding miscellaneous findings, 31 individuals or 13.6 per cent of the sample, could be considered to have some features of peripheral neuritis.

The occurrence of peripheral neuritis in association with alcoholism has varied according to the intake of Vitamin B_1. Thus, in the early 1940's the incidence was 15 - 20 per cent (8, 19). In a group of 78 very sick alcoholics seen in hospital, 33 were found to have peripheral neuritis. They were considered to have severe nutritional deficiency (30). In a group of paying patients admitted for alcoholism to the Saul Clinic, there were 0.6 per cent with peripheral neuritis (47). At Bridewell in Chicago a group of inmates comparable with our sample were found to have 1.5 per cent incidence of peripheral neuritis (19). It has been suggested that the low post--war incidence is a result of vitamin-enriched bread, which started in 1940-41 (19).

Our sample in the Don Jail had an incidence of 1.3 per cent, which was almost identical with the rate among the Bridewell inmates. The diet in jail or in "soup kitchens" or hostels includes large amounts of bread.

The prevalence of peripheral neuronal disorders is positively related to the number of years of heavy drinking, when those drinking for 15 years or less are compared to those drinking heavily more than 15 years ($P < .01$). We find a similar association with respect to the current age of the subjects ($P < .05$) with those above 45 years of age having a higher proportion of these disorders. When age and years of heavy drinking are cross-tabulated (Table XII - 18), it can be seen that the strong influence of years of heavy drinking remains in both age groups.

TABLE XII - 18

PER CENT WITH PERIPHERAL NEURONAL DISORDERS BY CURRENT AGE AND YEARS OF HEAVY DRINKING

Age	Years of Heavy Drinking		
	1 - 15 Years	Over 15 Years	Total
21 - 45 years	6.8% (4)	18.9% (10)	12.5% (14)
Over 45 years	8.1% (3)	25.4% (17)	19.2% (20)
Total	7.3% (7)	22.5% (27)	15.7% (34)[a]

[a] N.A.'s omitted.

There is no significant relationship between the incidence of these disorders and the number of drunk convictions in the last 6 years.

Specific Diagnoses

The categories in Table XII - 19 represent definite diagnoses verified by hospitalization records. There are probably others who would fit into these groups if a more extensive individual study could be carried out. When a group of sick alcoholics in hospital in Australia were examined, 33 patients of 78 had encephalopathy (30), while among Bridewell inmates one of 451 examined had Wernicke's encephalopathy (17).

TABLE XII - 19

CENTRAL NERVOUS SYSTEM: SPECIFIC DIAGNOSIS

Diagnosis	Number	Per Cent
Wernicke's encephalopathy	2	0.9
Korsakoff's psychosis	4	1.8
Cerebral arteriosclerosis	2	0.9
Epilepsy (cause unspecified)	15	6.6
Post-traumatic epilepsy	4	1.8
Herniated disc(s)	6	2.5
Others	9	3.8
Normal	182	80.2
N.A.	3	1.3
Total	227	99.8

Although unspecified epilepsy was found in 6.6 per cent of the inmates, several noted a later age of onset of seizures than is usually found in the idiopathic epileptic. The post-traumatic epileptic group usually had had a severe or moderately severe head injury preceding the onset of seizures.

The total incidence of 8.5 per cent epilepsy compares with an incidence of 8.0 per cent found by Feeney et al. (18) in a group of drunkenness offenders in jail. In contrast, the same study found no cases of epilepsy in a sample of voluntary patients in an alcoholism clinic. At the Saul Clinic, where the patients also are from a higher economic level, only 2 out of 2878 admissions were found to be epileptic (47). It would appear that chronic drunkenness offenders are more likely to be epileptic than are alcoholics of a higher economic status.

A subject of discussion in the literature has been whether epilepsy makes an individual prone to alcoholism or whether alcoholism precipitates epilepsy. Froment states that epilepsy due to alcoholism usually manifests itself after the age of 40 (20). This age of apparent incidence is found in our group. It is well known that brain trauma predisposes to epilepsy. Lennox claims that convulsions occur in 5 to 10 per cent of cases with head trauma (34). The very high incidence of skull fracture (14.3 per cent) in our sample, usually incurred when drinking, is in keeping with this. The incidence of epilepsy in the British general population is a maximum of 0.2 per cent (46). In a working population of oil refinery workers the incidence was found to be similar (35).

It would seem likely that the very high incidence of epilepsy in our group is, in part, due to a combination of head injury and heavy alcohol drinking but a qualification must be made: 5 of the subjects listed with epilepsy were known not to be heavy drinkers but, after only a few drinks, they did become atoxic and hence vulnerable to arrest for being drunk. This increased likelihood of arrest may account for the higher incidence of epilepsy among chronic drunkenness offenders.

Miscellaneous Findings

The men listed as having memory loss in Table XII - 20 were those who showed evidence of this condition on examination. In addition, most of the subjects had experienced one or more "amnesic" episodes or "blackouts", when they would be oblivious of events occurring over varying periods of time. This was not related to the number of drinks of alcohol taken prior to their spells, according to the subjects' own statements. They seemed strangely unconcerned about this phenomenon.

TABLE XII - 20

CENTRAL NERVOUS SYSTEM: MISCELLANEOUS FINDINGS

Diagnosis	Number	Per Cent
Memory loss (including Korsakoff's and Wernickes)	12	5.3
Nystagmus	4	1.8
Tension headaches	11	4.9
Other headaches	19	8.4
Normal	175	77.1
N.A.	6	2.6
Total	227	100.1

Headaches were definitely associated with tension in 4.9 per cent of the subjects. Of the remaining 8.4 per cent, most could not be easily categorized on one examination but were probably of the tension variety. No cases of migraine were found.

Motor Disturbance

TABLE XII - 21

MOTOR DISTURBANCES

Diagnosis	Number	Per Cent
Tremor	17	7.5
Muscle wasting	6	2.6
Myotactic irritability	8	3.5
Staggering gait	2	0.9
Normal	188	82.8
N.A.	6	2.6
Total	227	99.9

The tremor seen in this population was usually that of a coarse, irregular variety, classically seen in old alcoholics and known as the "alcoholic tremor". No particular significance could be attached to the muscle wasting. Myotactic irritability was usually found at the chest wall and was identical to that associated with marked weight loss. Wrist drop was present at time of examination in 2 men. The etiology of the staggering gait was not obvious; it was suspected there was a cerebellar disorder, perhaps a localized degeneration.

Brain Damage

There were clearly 6 subjects with brain damage associated with alcoholism, presenting Wernicke's or Korsakoff's syndromes. Six others, presenting cerebral arteriosclerosis and post-traumatic epilepsy, had definite brain damage. Several of the 15 idiopathic epileptics probably had varying degrees of brain damage. In addition, 2 subjects with staggering gait presumably had cerebellar damage that could be attributed to chronic alcoholism. There were 6 additional subjects with memory loss who could similarly have significant brain damage. In total there was reason to suspect brain damage in 15.4 per cent of the subjects.

G. GASTRO-INTESTINAL SYSTEM

TABLE XII - 22

LIVER DISORDERS

Diagnosis	Number	Per Cent
Liver enlarged, only	14	6.2
Liver and spleen enlarged	2	0.9
Cirrhosis confirmed (no complications)	3	1.3
Cirrhosis with varices	1	0.4
Cirrhosis with ascites	1	0.4
Cirrhosis (probably)	10	4.4
Borderline abnormalities	10	4.4
Normal	185	81.5
N.A.	1	0.4
Total	227	99.9

Cirrhosis

No liver enlargement or evidence of liver disease was found in 82 per cent. The remaining 18 per cent are described in Table XII - 22. The significance of an enlarged liver as a solitary finding is difficult to assess. These livers were all easy to feel, particularly in thin males, and were at least two finger-breadths below the right costal margin at the mid-clavicular line. It is possible that these represented fatty livers, or early cirrhosis. Cirrhosis without complications was verified in 1.3% of the group. When varices, ascites and splenic enlargement were added, definite cirrhosis occurred in 3.0 per cent of the group.

The larger group of 4.4 per cent with probable cirrhosis was made up of individuals with sufficient previous and current abnormalities based on laboratory and physical examination to justify such a diagnosis. It was concluded, therefore, that a total of 7.4 per cent of the subjects either had or most likely had cirrhosis. An additional 4.4 per cent were found to have borderline abnormalities in that there were abnormal liver function tests and a large liver in which one might suspect cirrhosis

of the liver. If this group of 4.4 per cent is added to the 7.4 per cent, the total possible incidence of cirrhosis is 11.8 per cent. Finally, if the 6.2 per cent with solely an enlargement of the liver are added, a total of 18.0 per cent could be considered as worthy of investigation for cirrhosis. Additional investigations such as serum proteins, bromsulphalein excretion and liver biopsies might be rewarding.

Studies assessing the incidence of cirrhosis are meagre. No mention of cirrhosis was found in the Minneapolis study. The Chicago Skid Row study reports a mortality rate from cirrhosis of 156.7 per 100,000, for all males living in cubicle type hotels in Chicago, 1955-57 (6), compared to a corresponding U.S. general population rate of 14.2 per 100,000. Small et al. (50), studying 115 Skid Row subjects admitted to hospital, found 72 with liver enlargement of some degree; 3 (2.2%) with clinical evidence of cirrhosis. This is close to our finding of 3.0 per cent with definite cirrhosis. One has to turn to necropsy studies for further information. Of 17,874 autopsies from 1918 - 1937, 217 cases or 1.2 per cent incidence of cirrhosis were found in the U.S.A. (17). In a Japanese study comparing death rates throughout the world, cirrhosis as cause of death is given as 4.5 per 100,000 for Canada and 9.6 per 100,000 for the U.S.A. (49).

Studies of chronic alcoholics show that even where there are abnormalities of liver function, cirrhosis is diagnosed infrequently. Joske and Turner (30) found the liver enlarged in 51 of 78 chronic alcoholics. The term "nutritional hepatitis" was used to describe 20 of this group. An English study (32) stresses that clinical evidence of liver disease only occurs in the minority of alcoholics and when it does, it is in the late stages of alcoholism. Kay et al. (33)reemphasized this point. Haggard and Jellinek feel that cirrhosis of the liver does not occur in more than 8 per cent of chronic alcoholics, although fatty liver occurs in 75 - 80 per cent (21).

The Warlingham Park Study of 118 "alcoholic addicts" (33) revealed a high proportion of abnormal laboratory tests indicating liver dysfunction, but found none with clinically detectable cirrhosis. Voegtlin (52), investigating liver function and chronic alcoholism, again stressed the rarity with which classic findings of portal cirrhosis were encountered; it was felt that the characteristic hepatic abnormalities accompanying chronic alcoholism do not represent cirrhosis. Of interest is the fact that more liver dysfunction was found by Voegtlin in the overweight group, while most of the men in our study were grossly underweight. Willens (54) compared

519 chronic alcoholics with 600 consecutive non-alcoholics at necropsy and found an incidence of 27.9 per cent cirrhosis in the alcoholics and 6.7 per cent for the non-alcoholics. These included all degrees of severity of hepatic lesions including those only found histologically.

Liver Disorders, Drinking and Age

The role of the drinking pattern in terms of years of heavy drinking, the number of years since the onset of delirium tremens and the duration of morning drinking, was tested in relation to liver disorders. No relationship was found between any of these indices of the duration of heavy drinking and the presence of abnormal liver findings. Similarly, no correlation was found between the age of the subjects and the presence of liver disease.

Liver Function

There is no doubt that liver abnormalities, including cirrhosis, are much more prevalent in all types of alcoholics than in non-alcoholics. It is usually stressed that early treatment of the alcoholic is important to prevent irreversible liver damage. In our sample this is possibly being done by the legal means of sentencing the drunk to jail where he is forced to sober up and usually eats large amounts of food until released from jail. This repeated routine of being sentenced to jail is suspected of preventing a great deal of permanent liver damage by shortening sprees and offsetting malnutrition.

Laboratory Tests.- Approximately 12 per cent of the specimens showed over 2+ urobilinogen, which we consider to be definitely abnormal. Only 2 per cent showed 3+ or 4+. This is in keeping with the observation on medical examination that there was very little obvious liver damage. No urobilin was found, confirming that no obstruction to bile flow was present.

There was no significant elevation of cephalin cholesterol flocculation (C.C.F.). This reliable test for parenchymal damage indicates that no significant abnormalities could be detected in the group. Only 10 per cent showed any positive reaction.

At the Saul Clinic (47) 66 per cent were found to have positive C.C.F. reaction.

TABLE XII - 23

LIVER FUNCTION: LABORATORY TESTS

Test	Number	Per Cent
(i) Urobilinogen		
1 unit or less	129	56.9
1.1 - 2.0	62	27.3
2.1 - 3.0	20	8.8
3.1 - 4.0	3	1.3
4.0 +	1	0.4
N.A.	12	5.3
Total	227	100.0
Urobilin		
Positive	0	-
Normal	216	95.2
N.A.	11	4.8
Total	227	100.0
(ii) Cephalin Cholesterol Flocculation		
Negative	199	87.7
1 +	18	7.9
2 +	4	1.8
N.A.	6	2.6
Total	227	100.0
(iii) Thymol Turbidity		
0 - 0.9 units	27	11.9
1 - 1.9	53	23.3
2 - 2.9	59	26.0
3 - 3.9	38	16.7
4 - 4.9	18	7.9
5 - 5.9	8	3.5
6 - 6.9	3	1.3
7 - 7.9	3	1.3
8 - 8.9	0	-
9 - 9.9	1	0.4
N.A. (10 rejected because too lipemic)	17	7.5
Total	227	99.8
(iv) Lipemia		
Negative	198	87.3
1 +	18	7.9
2 +	3	1.3
3 +	0	0.0
4 +	1	0.4
N.A.	7	3.1
Total	227	100.0

Approximately 15 per cent of the thymol turbidity findings were over 4 units. The presence of positive results suggestive of hepatic damage in comparison to lack of abnormality in the cephalin cholesterol flocculation is difficult to assess. Since it is known that the thymol turbidity tends to remain abnormal long after the C.C.F. returns to normal, it could mean that we are finding evidence of lingering hepatic abnormality (38).

Although an attempt was made to exclude lipemic sera we could not be certain that the subjects were all fasting. The abnormal thymol turbidity tests, that is, over 4.0 units, were assessed with respect to age, and were found to occur more frequently in the older age group (Table XII - 24).

TABLE XII - 24

THYMOL TURBIDITY AND AGE

Age	Under 4 Units	Over 4 Units
21 - 45 years	90%	10%
Over 45 years	77%	23%
	(105)	(111)

($X^2 = 5.75$, 1 d.f., $P < .02$)

There was no relationship between the number of convictions over the past 6 years or duration of heavy drinking and elevated thymol turbidity.

The presence of significant lipemia seen as lactessence in about 10 per cent of patients is of great interest. Lowowsky et al. (36) found that all of their alcoholic patients with hyperlipemia had evidence of liver damage on admission. This hyperlipemia later returned to normal.

It would be of value to pursue further studies in our group of subjects to see if they had low lipoprotein lipase activity.

No examples of Zieve's syndrome (with lipemia, hemolytic anemia and abdominal pain) were found in our group (55).

Hepatitis

Table XII - 25 shows the cross tabulations of previous hepatitis cases with current liver findings.

TABLE XII - 25

HEPATITIS HISTORY AND LIVER FINDINGS

Current Liver Findings	History of Infectious Hepatitis	History of Serum Hepatitis
No abnormalities	10	0
Liver enlarged (only)	1	0
Cirrhosis	0	1
Probable cirrhosis	2	0
Borderline abnormalities	2	1
Total	15	2

Viral hepatitis is considered to be an etiological agent which may occasionally produce cirrhosis of the liver, but since the incidence of cirrhosis of the liver following infectious hepatitis is very low, at most less than 1 per cent, the converse method of investigation of studying patients with cirrhosis for previous hepatitis may be fruitful. The data on our sample would suggest that 6 (or 41 per cent) of 17 cases with previously documented hepatitis had significant liver disease, much of which could be cirrhosis.

Hepatitis, like tuberculosis, is a public health problem. We have no way of knowing what percentage of our group are carriers of the hepatitis virus. The unhygienic surroundings and the barrack-type of existence that these men live probably make for the easy spread of infection.

Gall Bladder and Pancreatic Disease

Not one of our inmates had a previous history of gall bladder disease or pancreatitis on the basis of current examination and study of their hospital admission records. This is contrary to findings in hospital studies of Skid Row alcoholics (50) and surveys of Skid Row populations. The Chicago study of Skid Row (6) reports a gall bladder

disease rate of 7 per 1,000 population. It is possible that when pancreatitis occurs in chronic drunkenness offenders these men become too ill to return to Skid Row drinking or else their mortality is sufficiently high that they are not seen in the sample in jail. Very commonly patients with gall bladder disease are overweight, but our sample is grossly under the average weight of the Canadian male population. Perhaps their malnutrition is a more important factor in the prevention of cholelithiasis and pancreatitis than alcohol is as an etiological factor. This might be a fruitful field for investigation.

Upper Gastro-Intestinal Tract

TABLE XII - 26

UPPER GASTRO-INTESTINAL TRACT DISORDERS

(Current or Past)

Diagnosis		Number	Per Cent
Dyspepsia		32	14.1
Peptic ulcer (uncomplicated)		6	2.6
Peptic ulcer gastrectomy:	poor results	6	2.6
	good results	3	1.3
	perforations	1	0.4
Peptic ulcer hemorrhages		4	1.8
Gastritis		13	5.7
Gastro-intestinal hemorrhage (undiagnosed)		13	5.7
Normal		149	65.6
Total		227	99.8

Only dyspepsia of distinct chronicity was included in this tabulation. These subjects suffered from such symptoms as bloating, "gas", belching, heartburn and waterbrash. There was no evidence of any upper gastro-intestinal disturbance in 65.6 per cent. Probably, if gastro-intestinal roentgen studies were performed, other cases with old and new peptic ulcers would be detected.

Twenty (or 8.7 per cent) were found to have had peptic ulcers with or without complications. Fifty per cent of this group (or 4.3 per cent of the sample) had gastrectomies. Sixty per cent of the gastrectomies had poor results in that they had features of dumping syndrome and marked loss of weight. This bears out the contention that the alcoholic with peptic ulcer is not a good candidate for surgery.

The 13 subjects labelled as having gastritis usually gave a history of an illness, following a heavy drinking bout, that was characterized by nausea, severe retching and vomiting of blood. An equal number had histories of upper gastro-intestinal bleeding or melena of limited duration for no known reason. Many of these probably represented gastritis or perhaps a bleeding peptic ulcer.

The 8.7 per cent incidence of known peptic ulcer in our group compares with the 8.5 per cent incidence of Canadians found to have peptic ulcer in a 1950 -51 survey (13). Bingham (5) also found that the incidence of peptic ulceration in alcoholics was the same as the general population. In the Chicago Skid Row study (6) 2.8 per cent were found to have peptic ulcer; the incidence rose to 8.9 per cent when only heavy drinkers were considered. In the Minneapolis hostel series (7) an incidence of less than one per cent is reported. Joske and Turner (30), studying 78 chronic alcoholics who were incapacitated and in hospital, found 7.7 per cent with peptic ulcer, 7.7 per cent with gastritis, 19.2 per cent with hematemesis, and 15.4 per cent with dyspepsia. Martimor (37),in a French study of gastrectomies in alcoholics, found that 7.4 per cent of alcoholics versus 1.8 per cent of non-alcoholics underwent gastrectomy for peptic ulcer. Although they found cases in which alcoholism developed after the gastrectomy, no such pattern was found in our series. Seven of 23 patients (30%) with peptic ulcer and alcoholism in Bingham's series had had gastrectomies.

The high proportion of gastrectomies among the men in our sample having peptic ulcers, suggests that alcoholics have more complications of their ulcers than non-alcoholics.

No relationship was found between the incidence of peptic ulcer in our sample and either age or years of heavy drinking.

Bowel Disturbances

No obvious abnormality of the bowels was found in 86 per cent of the group. Only 0.9 per cent had chronic diarrhea. This is less than one usually sees in a group of alcoholics.

Chronic constipation was found in 10.6 per cent of the inmates, compared to 0.5 per cent in the Chicago study (6). This difference may represent differences in methods of study and definition.

The group of 2.6 per cent in our sample with definite hemorrhoids is a minimum figure since careful rectal examinations were not performed on most of the group.

TABLE XII - 27

BOWELS

Diagnosis	Number	Per Cent
Chronic diarrhea	2	0.9
Chronic constipation	24	10.6
Hemorrhoids (definite)	6	2.6
Normal	195	86.0
Total	227	100.1

The 19.4 per cent of the inmates found to be edentulous, compares favourably with the 27 per cent found in the Chicago Skid Row study (6), but is slightly higher than the 12.9 per cent found in the Minneapolis hostel study (7). These differences are consistent with the differences in the age-distributions in the three samples. It is also significant that a large proportion of the edentulous men in all these groups currently lacked dentures. A test was done to see if the high proportion who were edentulous in our sample, and thus presumably had difficulties in eating, helped to explain the high probability of being underweight, but no relationship was found between relative weight and dental condition.

In the incidence of marked caries, our sample (47.6%) falls between the Minneapolis hostel group (33.5%) (7) and the Duluth casual labourers (77.7%) (22). All these samples reflect a gross neglect of dental hygiene among homeless men, inebriates or not.

Teeth

TABLE XII - 28

TEETH

Diagnosis	Number	Per Cent
Edentulous	44	19.4
Caries (gross rampant)	108	47.6
Normal	75	33.0
Total	227	100.0

H. HEMATOLOGY

TABLE XII - 29

HEMATOLOGICAL LABORATORY RESULTS

	Number	Per Cent
(i) Hemoglobin		
Erythremia (17.0 +)	5	2.2
Normal (13.1 - 16.9)	197	86.8
Mild anemia (11.1 - 13.0)	13	5.7
Moderate anemia (8.0 - 11.0)	1	0.4
Severe anemia (7.9 or less)	2	0.9
N.A.	9	4.0
Total	227	100.0
(ii) White Blood Count		
Below 4,000	5	2.2
4,000 - 10,000	194	85.5
Over 10,000	20	8.8
N.A.	8	3.5
Total	227	100.0
(iii) Blood Smear Differential		
Normal	199	87.8
Lymphocytosis	9	4.0
Granulocytopenia	6	2.6
Atypical lymphocytes	4	1.8
Granulocytosis	1	0.4
Eosinophilia	1	0.4
Shift to left	1	0.4
N.A.	6	2.6
Total	227	100.0
(iv) Blood Smear (Red Blood Cell Morphology)		
Normal	205	90.3
Hypochromic microcytic	7	3.1
Hyperchromic macrocytic	3	1.3
N.A.	12	5.3
Total	227	100.0

Only 1.3 per cent of the subjects have moderate or severe anemia, and 7.0 per cent anemia of any degree. This very low incidence of significant anemia is in keeping with the observation that this group lacks active disease affecting hematopoiesis.

The fact that 5 subjects have an elevated hemoglobin remains unexplained.

The presence of 8.8 per cent leucocytosis could represent the current rate of recent infection in the group. The most common abnormality in the blood smear of lymphocytosis and atypical lymphocytes totalling 5.8 per cent could imply recent viral infection. At the Saul Clinic, 37.2 per cent were found to have white blood counts of over 10,000 (47) as compared with 8.8 per cent of our sample.

Whether the leukopenia found in 5 men was temporary or not could not be answered in this study. McFarland and Libre (38) described 10 alcoholics who responded to severe infection with severe temporary leukopenia. Their patients did not have significant liver disease. Malnutrition and associated folic acid deficiencies were felt to be possible factors. It is known that many of our men on occasion drank non-beverage alcohol, which could be myelotoxic. This abnormality warrants further study.

The group of 3.1 per cent with hypochromic microcytic smears represents iron deficiency and could indicate previous low-grade hemorrhages.

Only 3 inmates, or 1.3 per cent, with the hyperchromic macrocytic smears could be considered to have "nutritional deficiency" anemia.

I. GENITOURINARY TRACT

Venereal Disease

The total lifetime incidence of gonorrhea (29.6%) is a minimal figure, since many of the inmates were reluctant to talk about this area of their medical history. The total incidence of syphilis was 7.0 per cent. Two subjects denied having syphilis yet had positive venereal disease research laboratories (V.D.R.L.) tests. Since no treponemal immobilization tests were done, it was impossible to rule out biologically false positive results. Approximately one-half of those with acknowledges syphilis (past) had positive V.D.R.L.s. Approximately 33 per cent of the group admitted to having venereal disease at least once. Many said they had had the disease on more than one occasion. One inmate had active gonorrhea at the time of examination and was receiving treatment in the jail.

TABLE XII - 30

VENEREAL DISEASE

Diagnosis	Number	Per Cent
Gonorrhea - past	57	25.1
Gonorrhea - active	1	0.4
Syphilis - past	6	2.6
Syphilis and gonorrhea - past	10	4.4
Positive syphilis tertiary stage (no history)	2	0.9
Positive syphilis tertiary stage (history concurs)	8	3.5
Normal	140	61.7
N.A.	3	1.3
Total	227	99.9

Venereal Disease Research Laboratories Tietres -	1:1	5
"	1:8	1
"	1:16	1
"	weakly neg.	3
Sub-total		10

In the Duluth study of labourers (22) active syphilis was diagnosed in 1.8 per cent of the sample and 8.4 per cent had positive Wasserman tests. In the Minneapolis study (7), 3.0 per cent were found to have positive V.D.R.L. The higher-status alcoholics at the Saul Clinic (47) were found to have a positive Mazzini test in 8.0 per cent of the cases.

No relationship was found between either age or duration of heavy drinking, and the history of venereal disease in our sample.

TABLE XII - 31

GONADAL DYSFUNCTION

Diagnosis	Number	Per Cent
Testicular atrophy	7	3.1
Gynecoid escutcheon	13	5.7
Sparse pubic hair	2	0.9
Normal	200	88.1
N.A.	5	2.2
Total	227	100.0

It was difficult to assess the significance of the testicular atrophy since this was identified only on the basis of exceedingly small testes apparent on physical examination. No biopsies were done. In the Minneapolis study hypogonadism was found in 1.7 per cent (7), and in the Duluth series in 2.5 per cent (12).

Adding subjects with gynecoid escutcheon (5.7%) to the 0.9 per cent with sparse pubic hair, we found 6.6 per cent with abnormal pubic hair distribution in our group. It is medically well-established that cirrhosis of the liver tends to produce such pubic hair distribution. In our sample 5 of the 17 men with definite or probable cirrhosis had abnormal pubic hair distribution.

Urinary Tract Abnormalities

TABLE XII - 32

URINARY TRACT ABNORMALITIES

Diagnosis	Number	Per Cent
Prostatism	12	5.3
Albuminuria: one plus	6	2.6
trace	5	2.7
White blood cells in urine (over 5/h.p.f.)	22	9.7
Red blood cells in urine (over 5/h.p.f.)	4	1.8
Acute nephritis (possible)	2	0.9
Acute pyelonephritis	2	0.9
Miscellaneous complaints	20	8.8
Normal	153	67.4
N.A.	1	0.4
Total	227	100.5

The prevalence of renal tract abnormality is small (Table XII - 32). The large group labelled as miscellaneous consisted of diverse entities, particularly hematuria. A common complaint was the presence of red or brown urine following a drinking bout. Unfortunately, no further classification was possible. Perhaps many of these represented hematuria following trauma to kidneys when drunk.

Other studies of albuminuria included the Minneapolis homeless men, with a combined rate of albuminuria of 3.2 per cent (7), and the Duluth casual labourers with 3.6 per cent (22). This is slightly less than our findings of combined albuminuria of 5.0 per cent but no instance was more than 1 + albumin found in our sample. Perhaps individuals with albumin in larger amounts would be so ill that they would be eliminated from the population going in and out of jail.

Prostatic hypertrophy was found in 4.3 per cent of the Minneapolis group (7), and 6.9 per cent of the Duluth sample (22). In the Chicago Skid Row, diseases of the genitourinary tract were described in 5.6 per cent of the population (6). Our findings of prostatism, probably due to prostatic hypertrophy, in 5.3 per cent of the sample, are almost identical.

J. METABOLIC FINDINGS

The proven incidence of diabetes mellitus was 0.8 per cent. The other inmates with glycosuria could not be diagnosed as diabetic, since blood sugar studies were not performed. The incidence of known diabetes is similar to that found in the general population.

The Minneapolis study revealed 1.3 per cent (7), and the Duluth labourers study showed 1.4 per cent to be diabetic (22). In the Chicago Skid Row an incidence of 0.6 per cent diabetes was reported (6). At the Saul Clinic 6 per cent of those better-off alcoholics were found to have an elevated blood sugar (47). It is possible that many of those with glycosuria represented hepatic dysfunction.

Those subjects described as having possible hypothyroidism (Table XII - 33) had many of the clinical features compatible with such a diagnosis. No confirmatory studies were possible. One individual was thought to be possibly hyperthyroid and one had had a previous thyroidectomy.

TABLE XII - 33

METABOLIC DISORDERS

Diagnosis	Number	Per Cent
Glycosuria	7	3.1
Proven mild diabetes	1	0.4
Proven severe diabetes	1	0.4
Goitre	2	0.9
Possible hypothyroidism	2	0.9
Normal	214	94.3
Total	227	100.0

K. MUSCULO-SKELETAL FINDINGS

Weight

The average height of our sample was 5 feet 8 inches. At this height, the Canadian average weight from 20 to 65 years ranges from 152 to 167 pounds with the arithmetic mean being 157 pounds. The average weight of the men in the sample is 144 pounds, or 13 pounds less than the comparable Canadian average (14).

The distribution of the weights of our subjects relative to the Canadian averages for men of the same ages, is presented in Table XII - 34.

TABLE XII - 34
WEIGHT DISTRIBUTION COMPARED TO THE CANADIAN ADULT MALE AVERAGES [a]

Relative Weight	Number	Per Cent
30 or more pounds under average weight	75	33.0
20 to 29 " " " "	50	22.0
10 to 19 " " " "	48	21.1
Within 10 pounds of " "	42	18.5
10 to 19 pounds over " "	5	2.2
20 to 29 " " " "	2	0.9
N. A.	5	2.2
Total	227	99.9

[a] "The Report on Canadian Average Weights, Heights, and Skinfolds", Canadian Bulletin on Nutrition, Vol. 5, No. 1, 1957.

Over 75 per cent of the group are under the Canadian average weight. One-third of the group are more than 30 pounds under this weight. Less than one per cent are 20 pounds heavier than the average weight. This would indicate that the chronic drunkenness offender eats much less than most of his fellow Canadians.

No significant relationship was found between the relative weights of the men and either current age or years of heavy drinking. In addition, no differences were found when the number of convictions in the last 6 years was tested. It would appear that being underweight is a general condition, cutting across these other differences. These men lose weight very early in their drinking careers and retain this pattern as long as they are leading this life. Indeed, the question of whether overweight men are likely to enter this population at all might merit investigation. Overeating may be a substitute pathology.

These men claim that they lose a great deal of weight when living on Skid Row and gain very rapidly in jail where many of them eat voraciously. In attempting to confirm this statement, a random sample of 85 subjects were measured for weight change during their period of incarceration.

TABLE XII - 35

WEIGHT CHANGE IN JAIL IN PER CENT
(N = 85)

Days in Jail	Lost Weight	No Change	Gained 1 - 5 Lbs.	Gained 6 - 10 Lbs.	Gained Over 10 Lbs.	Total
1-14 days	5.0	5.0	35.0	35.0	20.0	100.0 (20)
15-28 "	16.7	-	66.7	16.7	-	100.1 (6)
Over 28 "	6.8	5.1	37.3	39.0	11.9	100.1 (59)
All lengths of stay	7.1	4.7	38.8	36.5	12.9	

Table XII - 35 indicates that the great majority of men (88.2%) gained weight, but it also shows that the relationship between the time spent in jail and the gains in weight is not linear. The explanation seems to lie in the probability that had daily records been kept, weight gains would have been shown to occur during the first 7 to 14 days, after which there would be a levelling off or even a slight decrease in some cases.[3]

[3] Mean weight gain for 14 days 6.74 lbs; for 29 days 5.28 lbs.

In addition, there appears to be an inverse relationship between age and the amount of weight gained, with the mean gain in the 21 - 35 year age-group being 10.6 pounds; in the 36 - 50 age group 6.4 pounds, and over 50 years of age only 4.3 pounds. Using the mean weight gain we found no relationship between it and the extent of the individual's integration in Skid Row life, the number of convictions for drunkenness within the last year, or the number of years of heavy drinking.

From the fact that most of the men gain weight in jail, we can conclude that their periods of incarceration result in the avoidance of prolonged malnutrition that would probably occur if they lived in Skid Row and drank consistently. In the Toronto area, where these men are arrested and sentenced frequently after varying but relatively short periods of freedom, the jail exerts a protective influence against physical deterioration. Otherwise, this group of men would present greater evidence of diseases that could be attributed to malnutrition - such as cirrhosis or peripheral neuritis.

When a comparison was made with the weights found in the Minneapolis (7) and Duluth (22) studies of homeless men, our sample of inebriates was found to have a much larger proportion who were underweight. This is to be expected, since the medical examination of the C.D.O.s took place within a few days of their admission to jail. For most of them their arrest marked the end of a drinking bout, during which the majority ate little or nothing. If the examination had been done at the time of their release from jail, the differences between their weights and those of other homeless men would undoubtedly have been much less. It should be noted that in the two samples of homeless men mentioned above, the proportion underweight, although much smaller than our sample, was 3 times as large as the proportion overweight. Obesity is apparently rare on Skid Row.

Willen's (54) necropsy study of alcoholics compared to non-alcoholics showed that the non-alcoholics at autopsy were more underweight. This is probably because non-alcoholics often die after protracted wasting illnesses; while the alcoholics are more apt to die precipitously.

Figueroa et al. (19) found that 23.0 per cent of alcoholic prison inmates were underweight.

Body Build

The classification of body build was made on the basis of the overall clinical impression of the individual's physical appearance. The assessment that 46 per cent of the group were thin is striking. So, too, is the finding that only 3 per cent were obese. The older the individual the more likely he was to be found thin in body appearance.

TABLE XII - 36a

BODY APPEARANCE

Appearance	Number	Normal
Normal	107	47.1
Thin	104	45.8
Muscular	8	3.5
Obese	7	3.1
N.A.	1	0.4
Total	227	99.9

A relationship was also found between body build and years of heavy drinking, but the relationship was no longer significant when age was controlled.

TABLE XII - 36b

BODY APPEARANCE AND AGE IN PER CENT

Age	Normal[a]	Fat	Thin	Total
21 - 45 years	61	2	37	100.0 (113)
Over 45 years	41	4	55	100.0 (113)

[a]Muscular group is included in the normals.

$X^2 = 9.73$, 2 d.f., $P < .01$

Hernias

Although most of the men in the first category (Table XII - 37) did not seem to be much concerned about repair, they were aware of their hernias. Rates that differed little were found in the Minneapolis study (7), which found that 4.9 per cent of the group had hernias, and in the Duluth (22), which showed a rate of 3.6 per cent. In the Chicago Skid Row study (6) the rate was 8.1 per cent.

TABLE XII - 37

HERNIAS

Diagnosis	Number	Per Cent
Inguinal hernia	7	3.1
Hernia repaired	9	4.0
Normal	211	92.9
Total	227	100.0

Arthritis

The cases diagnosed as arthritic (Table XII - 38) were those with clear evidence from hospital records or current examination or both. The numbers are probably minimal since neither the search for records nor the examination was exhaustive. In the Chicago Skid Row study (6), 13.2 per cent were described as having arthritis and rheumatism compared with 11.8 per cent in our C.D.O. sample.

TABLE XII - 38

ARTHRITIS

Diagnosis	Number	Per Cent
Rheumatoid arthritis (active)	1	0.4
Rheumatoid arthritis (inactive)	2	0.9
Osteoarthritis	18	7.9
Marie-Strumpell spondylitis	1	0.4
Non-specific joint swelling	4	1.8
Gout	1	0.4
Normal	200	88.1
Total	227	99.9

General population surveys of males indicate lower rates, but these populations are not as old as the C.D.O. group. In addition, milder osteoarthritis and non-specific joint disease are not usually included in these surveys. The Canadian Sickness Survey (13) described a total rate of 5.3 per cent for arthritis and rheumatism in adult males. The American survey of a non-institutional population over the age of 14 years showed that 6.9 per cent of the population were seen by doctors for arthritis and rheumatism (51). Although it cannot be stated conclusively, it does seem likely that the C.D.O. group has a rate that is not radically different from the general male population of the same age.

Amputations and Deformities

Over 25 per cent of the group had significant deformities which would be obvious to anyone. Most of these involved disfiguration of the face (35 out of the 59 cases), which included many severely battered, twisted noses, probably indicative of accidents or physically violent behaviour when drinking.

The deformities of the spine represented unknown factors, perhaps old polio or spinal column injuries. The deformities of the limbs were the result of old injuries, several being the sequela of nerve damage.

TABLE XII - 39

MUSCULO-SKELETAL ABNORMALITIES AND DISFIGURATIONS

Diagnosis	Number	Per Cent
Disfiguration of face	29	12.8
Spinal deformities	7	3.1
Amputation or limb deformities	15	6.6
Facial and spinal deformities	1	0.4
Facial, with amputation and limb deformities	5	2.2
Spinal and limb deformities with amputations	2	0.9
Normal	168	74.0
Total	227	100.0

This high incidence of disfiguration and amputation is in keeping with the hazards of the rugged, drunken life that most of these men lead. This condition could be a handicap in many instances if they were to seek gainful employment.

L. CUTANEOUS ABNORMALITIES

TABLE XII - 40

CUTANEOUS ABNORMALITIES

Diagnosis	Number	Per Cent
Chronic dermatitis	23	10.1
Acne	2	0.9
Chronic dermatitis and acne	1	0.4
Spider nevi	39	17.2
Plethora	10	4.4
Spider nevi and plethora	8	3.5
Normal	144	63.5
Total	227	100.0

Chronic dermatitis cases included those men with neurodermatitis, psoriasis and non-specific conditions. The large number with spider nevi fulfilled all of the criteria with a central raised arteriole which, when pressed, resulted in blanching of the branches of the arterioles. Most of the individuals had only a few, which occurred at the anterior V area of the neck and upper chest, representing the influence of their outdoor life and open shirt collars, where the ultra-violet rays of the sun could exert their action.

However, some observers, including Bean (4), have felt that spider nevi are indicative of liver disease, presumably cirrhosis. Table XII - 41 shows the distribution of spider nevi in relationship to liver abnormalities. It shows that spider nevi cases are significantly over-represented in the liver condition category. Furthermore, there is in our sample greater likelihood of spider nevi occurring with more definite or pronounced liver abnormalities. Bean (4) states that spider nevi occur in any type of hepatic disease no matter what the severity but that chronic and severe cirrhosis are the main offenders.

The incidences of both spider nevi and plethora were found to have no significant association with age or duration of heavy drinking.

TABLE XII - 41

SPIDER NEVI AND LIVER CONDITIONS

Spider Nevi	Liver Abnormalities			
	Yes		No	
	N	%	N	%
Yes	15	36.6	32	17.3
No	26	63.4	154	82.7
Total	41	100.0	185	100.0

$X^2 = 9.204$, 1 d.f., $P < .01$

It has been noted previously that there were only 5 (2.2%) findings of elevated hemoglobins (Table XII - 29). Further analysis of plethora cases and their laboratory hemoglobin showed that one had anemia, one had erythremia, and 15 were normal.

Skin disease was described in 4 per cent of the Chicago Skid Row study (6); in 4.1 per cent of the Minneapolis study (7); and in 8.3 per cent of the Duluth labourers (22). The much higher incidence in our study (Table XII - 40) is due, at least in part, to the inclusion of less serious disorders.

TABLE XII - 42

TATOOES

	Number	Per Cent
One tatoo	22	9.7
Two tatooes	8	3.5
Three or more tatooes	29	12.8
None	168	74.0
Total	227	100.0

Approximately 25 per cent of the men were found to have one or more tatooes. Several of these were pornographic in type. This high incidence of tatooes is in keeping with the notion that a man rarely seeks to be tatooed when he is sober. It is also consistent with the thinking that men who are tatooed are likely to be unattached men of lower class origin. Writers, from Lombroso to the present, have also asserted that men with tatooes are more likely to be anti-social or in some way emotionally maladjusted.[4]

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[4] "The conclusion seems warranted that psychopathy or social or emotional maladjustment is significantly higher among tatooed than among non-tatooed men." Lander, J., and Kohn, H.N., "A Note on Tatooing Among Selectees", American Journal of Psychiatry, 100: 326-327, 1943.

M. TRAUMA

Fractures and Amputations

Table XII - 43 gives a minimal index of orthopedic trauma, because many individuals had fractures of limbs, ribs or skull more than once. In addition, there are probably injuries which had been forgotten or for which no record was available. This was particularly so with respect to skull fractures, since the impression is that there are an unknown number who may have had skull fractures while drinking but did not seek medical attention.

TABLE XII - 43

HISTORY OF TRAUMA

		Number	Per Cent
Skull fractures		12	5.3
Rib fractures		24	10.6
Limb fractures		43	18.9
Other fractures		4	1.8
Multiple fractures:	Skull and rib(s)	2	0.9
	Skull and limb(s)	9	4.0
	Rib(s) and limb(s)	9	4.0
	Skull, rib(s), and limb(s)	8	3.5
Accidental amputation:	limb(s)	3	1.3
	Fingers and toes	6	2.6
Normal		104	45.8
N.A.		3	1.3
Total		227	100.0

	Number	Per Cent
Total with skull fractures	32	14.1
Total with rib fractures	43	18.9
Total with limb fractures	69	30.4

It is striking that over one-half of the men had at some time suffered fractures or amputations. This supports the opinion that trauma is an important factor in the lives

of the chronic drunkenness offenders and that probably many of them die from traumatic causes.[5]

Other studies showed a comparable incidence of men with amputations: the Minneapolis hostel study reported 3.0 per cent (6); the Duluth casual labourers study, 2.5 per cent (22); however, the Chicago Skid Row study reported a higher rate of 9.9 per cent (6).

Feeney et al. (18), studying a group of inmates similar to ours and comparing them to voluntary alcoholic clinic patients, found that 48 per cent of the group had severe head injuries with unconsciousness; with 8 per cent having post-traumatic epilepsy. They found no cases among the clinic patients. They felt that the high incidence of head injuries and physical deformities suggested accident proneness among drunkenness offenders. In addition, they pointed out that 6 of 14 who had suffered head injury before drinking became a problem, appeared to have personality changes following the injury.

Another feature worthy of speculation is the cost, in money and time that these injuries entail. The policy in the Toronto area of removing the drunk from the street by sending him to jail, probably saves the hospitals' emergency and surgical staffs an enormous amount of work. The more these men are allowed to roam the streets in a drunken condition the more accidents and fights they are likely to be involved in.

Burns

TABLE XII - 44

BURNS

Diagnosis	Number	Per Cent
Burns - minor	13	5.7
Burns - major	4	1.8
Normal	208	91.6
N.A.	2	0.9
Total	227	100.0

The subjects gave the impression that burns generally occurred when they were drunk and that many had suffered burns

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[5] See Chapter XIII

which had been forgotten. Thus, the figures in Table XII - 44 are probably minimal.

Most showed burn scars of their fingers from falling asleep with cigarettes in their hands, probably while drunk. These are not included in the diagnosis.

Gunshot Wounds and Stabbings

The few stab injuries were inflicted when drinking and fighting but not the gunshot wounds. No relationship was found between the duration of heavy drinking and the presence of these injuries, which is not surprising since most of the injuries were incurred in war service.

TABLE XII - 45

GUNSHOT WOUNDS AND STABBINGS

Diagnosis	Number	Per Cent
Gunshot wounds - self inflicted	1	0.4
Gunshot wounds - war injury	14	6.2
Stab injury	3	1.3
None	208	91.7
N.A.	1	0.4
Total	227	99.9

N. HISTORY OF HOSPITALIZATION

The fact that over 75 per cent of the subjects had been hospitalized provided us with much additional or corroborative information for this study.

TABLE XII - 46

HOSPITALIZATIONS: GENERAL AND VETERANS' HOSPITALS

History	Number	Per Cent
Never hospitalized	51	22.5
One hospitalization	38	16.7
Two hospitalizations	49	21.6
Three hospitalizations	32	14.1
Four hospitalizations	15	6.6
Five hospitalizations	7	3.1
Six or more hospitalizations	33	14.5
N.A.	2	0.9
Total	227	100.0

Analysis by age shows a significant positive association between age and number of hospitalizations for the oldest and youngest groups, ($P < .01$) but there is no significance when all age groups are included because of the varied number of hospitalizations in the middle age group.

An association was found between the number of hospitalizations and the duration of heavy drinking ($.02 < P < .05$), but this is mainly due to a marked tendency for those drinking heavily over 20 years to be over-represented in the "3 or more hospitalizations" category.

TABLE XII - 47

HOSPITALIZATIONS: T.B. SANATORIA

History	Number	Per Cent
Once - less than 6 months	6	2.6
Once - from 6 months to 1 year	2	0.9
Once - over 1 year	4	1.8
Twice - 6 months to 1 year	1	0.4
Twice - over 1 year	2	0.9
Three or more periods (any length)	2	0.9
No history	210	92.5
Total	227	100.0

A study of the records shows that most of these men were behaviour problems while in sanatoria, sometimes becoming drunk, often leaving the institution before treatment was completed. The 7.5 per cent of the men with sanatoria care is close to the rate of 8.9 per cent with confirmed tuberculosis previously discussed. (See section on pulmonary diseases.)

TABLE XII - 48

HOSPITALIZATIONS: MENTAL HOSPITALS

History	Number	Per Cent
One period	14	6.2
Two periods	4	1.8
Three periods	2	0.9
Four periods	0	0.0
Five periods	1	0.4
Six periods	1	0.4
No history	205	90.3
Total	227	100.0

The proportion of the sample admitted to mental hospitals appears to be higher than the rate for the general male population. One study[6] has shown that 4.5 per cent of Ontario males 50 years of age in 1961 had at some time been admitted to mental hospitals. This contrasts with a rate of 9.7 per cent for the C.D.O. group (average age 46 years). Approximately one quarter of the C.D.O. admissions were, according to the hospital records, for acute or chronic alcoholism. The remainder listed other mental disorders as the reason for admission.

4a[6] "Rates of Admission to Mental Hospitals in Ontario", unpublished study by the Mental Statistics Branch, Department of Health, Province of Ontario.

O. CAUSES OF PARENTAL DEATHS

The data on the causes of parental deaths, obtained from the subjects as part of the routine history, were in reasonably close agreement with the generally accepted distribution of causal factors in the population. They also show that nearly twice as many mothers as fathers were still living at the time of the examination.

TABLE XII - 49

CAUSES OF FATHERS' DEATHS

Diagnosis	Number	Per Cent
Heart disease	34	15.0
Cancer	23	10.1
Trauma	13	5.7
Cerebro-vascular accident	12	5.3
Tuberculosis	4	1.8
Infections	3	1.3
Pulmonary disease	2	0.9
Cirrhosis	1	0.4
Unknown	56	24.7
Other	35	15.4
Still living	41	18.1
Not answered	3	1.3
Total	227	100.0

TABLE XII - 50

CAUSES OF MOTHERS' DEATHS

Diagnosis	Number	Per Cent
Heart disease	20	8.8
Cancer	18	7.9
Cerebro-vascular accident	15	6.6
Trauma	5	2.2
Tuberculosis	4	1.8
Infections	3	1.3
Cirrhosis	1	0.4
Pulmonary disease (not infectious)	1	0.4
Unknown	54	23.8
Other	30	13.2
Still living	72	31.6
Not answered	3	1.3
Total	227	99.3

P. CURRENT MEDICATION

TABLE XII - 51

MAIN CURRENT MEDICATION

Type of Medicine	Number	Per Cent
None	181	79.7
Digitalis	1	0.4
Anticonvulsants	9	4.0
Barbiturates	12	5.3
Tranquilizers	4	1.8
Ephedrine (Bronchodilators)	2	0.9
Others	18	7.9
Total	227	100.0

Many of these men had medication prescribed but had discontinued taking it. Only half of the epileptics were on their prescribed therapy. Only two of the bronchitis cases had their bronchodilators.

One of the reasons that so many were not taking medication is that such men are unreliable out-patient department attenders.

Q. ABILITY TO WORK

Categories

An assessment was made of the present fitness of each man to engage in physical labour. Those currently unfit were further classified in terms of whether they would be capable of doing physical labour after receiving proper treatment, leaving a residual category of men who could be regarded as permanently unfit. This assessment was not based on an objective score of total disabilities because such measures do not sufficiently take into account differences in degrees of impairment, the effect of various combinations of disabilities, or the influence of aspects of functioning not tabulated. It was felt advisable to use an overall and first-hand assessment of work capacity made by the examining physician. (However, a distribution of certain major disabilities that if sufficiently severe would influence capacity to work, is given in Table XII - 53.)

It should be emphasized that this assessment deals only with physical ability to work. No account is taken of learned work skills or of motivation to work.

Five categories were employed:

1. Heavy physical labour. Individuals who currently are physically capable of doing any type of unskilled labour.

2. Heavy labour after therapy. Presently unfit by reason of a correctable condition.

3. Light work. Currently capable of doing such physically undemanding work as running an elevator or sorting mail, or doing work tailored to such specific disabilities as minor amputations.

4. Light work after therapy. Presently unfit by reason of a correctable condition but also suffering disabilities that would rule out heavy labour.

5. Permanently unfit. Some restricting disabilities such as severe heart disease, senility, central nervous system disorders or major amputations, mean that these men are not suited to any gainful employment.

TABLE XII - 53

PHYSICAL ABILITY TO WORK

	Number	Per Cent
Heavy physical labour	137	60.4
Heavy labour after therapy	11	4.8
Light work	40	17.6
Light work after therapy	19	8.4
Permanently unfit	19	8.4
N.A.	1	0.4
Total	227	100.0

Re-grouping the figures in Table XII - 53, we find that 78.0 per cent were currently capable of working and that 13.6 per cent were unfit to work. If the required therapy had been administered, 65.2 per cent of the total group would have been capable of heavy labour, 26.0 per cent would have been able to do light work, and the residual group of permanently unfit would have been only 8.4 per cent.

Although there are no published assessments of the physical work capabilities of the general population with which to compare our findings, the Canadian Sickness Survey of 1950-51 (13) does give figures on the persons reporting permanent physical disabilities by broad age groups. The proportion of males over 24 years of age with "severe" or "total disability" was 4.1 per cent, a figure less than half the 8.4 per cent permanently unfit to work in our C.D.O. sample. But the Canadian sample, reflecting the age distribution of the general population, had a much larger proportion of young men (over half in the above 24 years category were under 45 years) than our sample. The considerable influence that this skewing can have is seen in the fact that 8.7 per cent of the Canadian males over 44 years of age reported "severe" or "total disability". It seems likely that a sample of Canadian males matched for age with our C.D.O. sample would have a proportion of severely handicapped that differed by only a couple of percentage points.

In the Chicago Skid Row study (6) the unhealthiest men were found to be the non-alcoholics, specifically the teetotalers and the light drinkers, who were on Skid Row for reasons not related to alcoholism. Of the total Skid Row

population in Chicago, 45 per cent were judged to be moderately handicapped or worse. When those moderately handicapped but capable of some work (comparable to our light work category) were grouped with the men without handicaps, the total capable of some useful work was 84.3 per cent; more than the 78 per cent currently fit to work in our sample. However, it is likely that if physical examinations and laboratory tests had been used with the Chicago sample, instead of self-reporting, a larger number of disabilities would have been uncovered.

Among the younger and less frequently alcoholic Minneapolis hostel sample (7), 75 per cent were judged to be capable of any kind of physical labour. Only 1.7 per cent were found to be totally unfit, compared to 8.4 per cent in our C.D.O. sample. Moreover, of the 14.6 per cent of the Minneapolis group with moderate limitations, many were considered reparable.

Tables XII - 55 and XII - 56 indicate that physical ability to work was related both to age and to years of heavy drinking but that not all categories of work capacity were affected in the same direction or to the same extent by the two variables. Comparing the two tables, we see that advancing age had a greater influence than prolongation of the drinking period in decreasing the proportion able to do heavy labour and increasing the proportion able to do only light work. On the other hand, it would appear that the presence of serious disabilities that rendered the men permanently unfit to work was almost entirely related to the prolongation of the period of heavy drinking; none of the subjects of whatever age who had drunk heavily less than 16 years was permanently unfit.

The proportion presently unfit who would be able to do heavy labour after therapy increased with heavy drinking but decreased with age. By way of explanation, it should be added that many men in this category were currently unfit because of malnutrition, a condition connected with prolonged heavy drinking. The proportion capable of light work after therapy increased with both variables but was more affected by age.

TABLE XII - 55

PHYSICAL ABILITY TO WORK BY CURRENT AGE
WITH YEARS OF HEAVY DRINKING CONTROLLED
(per cent)

Current Age	Heavy Labour	Heavy after therapy	Light Work	Light after therapy	Unfit	Total
		1 - 15 Years Heavy Drinking (N = 74)				
21 - 45 years	82.8	3.4	13.8	0.0	0.0	100.0(58)
Over 45 years	56.3	0.0	31.3	12.5	0.0	100.1(16)
Increase	-26.5	-3.4	+17.5	+12.5		
		Over 15 Years Heavy Drinking (N = 140)				
21 - 45 years	65.3	8.2	8.2	6.1	12.2	100.0(49)
Over 45 years	47.3	5.5	23.1	14.3	9.9	100.1(91)
Increase	-18.0	-2.7	+14.9	+ 8.2	- 2.3	

TABLE XII - 56

PHYSICAL ABILITY TO WORK BY YEARS OF
HEAVY DRINKING WITH AGE CONTROLLED
(per cent)

Years Heavy Drinking	Heavy Labour	Heavy after therapy	Light Work	Light after therapy	Unfit	Total
		21 - 45 Years of Age (N = 107)				
0 - 15 years	82.8	3.4	13.8	0.0	0.0	100.0(58)
Over 15 years	65.3	8.2	8.2	6.1	12.2	100.0(49)
Increase	-17.5	+4.8	- 5.6	+6.1	+12.2	
		Over 45 Years of Age (N = 107)				
0 - 15 years	56.3	0.0	31.3	12.5	0.0	100.1(16)
Over 15 years	47.3	5.5	23.1	14.3	9.9	100.1(91)
Increase	-9.0	+5.5	-8.2	+1.8	+9.9	

The relationship between physical capability for work and the extent of pathological drinking was further tested by using as indices the drinking of non-beverage alcohol and the incidence of delirium tremens or alcoholic hallucinations. In both cases a difference in the expected direction was found, but it was not large enough to be statistically significant. Among the men who drank only beverage alcohol, 73.5 per cent were capable of heavy labour compared with 60.4 per cent of the men who admitted to drinking non-beverage alcohol on occasion. (The categories "heavy labour" and "heavy labour after therapy" were combined for these calculations.) Among the men who had escaped delirium tremens or hallucinations, 73.4 per cent were capable of heavy labour, compared with 63.4 per cent of the men who suffered these experiences.

It was also expected that an increase in the period of exposure to the revolving door way of life would go with a decrease in the proportion physically fit. The indices employed appear to show the opposite, but once again the differences are not large enough to be statistically significant.

Using only the men over 45 years of age (since the younger men bias the findings in that they all enter this population early), we found that 59.6 per cent of those who had their first intoxication arrest before the age of 36 were fit for heavy labour, compared with 43.8 per cent of those first arrested after the age of 45. Similarly, 66.7 per cent of the men over 45 whose downward occupational mobility began before the age of 36 were fit for heavy labour, compared with 53.7 per cent of those who became downwardly mobile after the age of 45.

If the revolving door pattern does, in fact, protect the health of heavy drinkers in some degree, we ought to find that of the men who began heavy drinking at an early age those who started to be arrested for intoxication when they were young are more physically fit than those who were first arrested at a later age. To test this, the men who began heavy drinking before the age of 36 were divided into those who had experienced their first intoxication arrest before the age of 31, and those who were first arrested thereafter. It was found that 79.5 per cent of the men arrested at the earlier age were fit for heavy physical labour, as compared with 65.0 per cent of those arrested later, but the difference is not statistically significant.

Summary

A summary of the distribution in the sample of those physical disabilities that might, a priori, be expected to impair working ability, is contained in Table XII - 55. Since the table does not fully take into account the differences in the severity of the disabilities or the total effect on the individual of all his disabilities, it is not a substitute for the overall assessment of capacity for work made by the medical examiner. Although the 40.1 per cent of the men with such disabilities is close to the 39.6 per cent judged to be currently unfit for heavy labour, in a few cases these are not the same men.

TABLE XII - 55

INDIVIDUALS WITH SERIOUS DISABILITIES BY TOTAL NUMBER AND TYPE

Type of Disability	Subjects' Total Number of Disabilities 1	2	3	4	5	6	7	Total
Arteriosclerotic heart disease	6	3	4	-	-	-	1	14
Peripheral vascular disease	8	5	2	2	1	-	-	18
Emphysema - severe pulmonary insufficiency	-	-	-	-	-	-	1	1
Marked deafness	1	2	-	1	2	-	-	6
Optic nerve degeneration	-	-	-	-	-	-	1	1
Severe impairment of vision	3	2	3	-	1	-	1	10
Peripheral neuritis or spinal cord lesions	-	2	2	1	1	-	-	6
Central nervous system - diagnosed	18	13	5	3	2	-	1	42
Impaired coordination and memory loss	-	-	-	1	-	-	-	1
Severe liver damage	-	1	-	-	-	-	-	1
Gastrectomy with poor result	2	3	-	-	-	-	1	6
Severe anemia	1	-	1	-	-	-	-	2
Arthritis	8	7	4	3	2	-	1	25
Amputations or limb deformities	10	2	3	1	1	-	-	17
Total individuals (with one or several disabilities)	57	20	8	3	2	0	1	91
Per cent of sample (N = 227)	25.1	8.8	3.5	1.3	0.9	0.0	0.4	40.1

R. DISCUSSION

The purpose of this study has been to describe as thoroughly as possible the physical health of a group of chronic drunkenness offenders. We first approached these subjects with expectations coloured by the stereotyped portrayal of the Skid Row alcoholic in the mass media. At that time it seemed reasonable to expect that they would be physically debilitated "derelicts", that heavy and indiscriminate drinking, combined with malnutrition, exposure to the elements, and lack of medical care, would have produced serious and even irreversible damage to their physical health. The extent to which the research caused modification of this view is best summarized in the finding that over 90 per cent of these men were either fit at the time to perform useful labour or would have been after medical treatment.

It has been suggested several times in the body of this report that the revolving door pattern may have played a role in protecting the health of the men involved. The data from other phases of the study revealed that while their lives outside of jail were as rigorous as popularly pictured, they were likely to be arrested frequently (see Table XII - 3) and, on a majority of these occasions, to spend more than two weeks recuperating in the sheltered environment of the jail or reformatory.

Unfortunately, the hypothesis that the revolving door pattern had a prophylactic function, although highly plausible, could not be tested directly. To do so we would have had to locate and examine a control group of Skid Row alcoholics who were rarely arrested and jailed. However, some indirect evidence supported this hypothesis. The findings (pp. 42-3) that a majority of the men gain weight in jail indicates that frequent jailing tends to prevent prolonged malnutrition. In addition, two members of the research team had a chance to observe arrested inebriates in two United States cities that follow a policy of containing Skid Row alcoholics within a clearly demarcated Skid Row area instead of arresting them frequently. The observers were impressed with the contrast between the highly debilitated appearance of the men who came into court under this laissez-fair system and the relatively healthy appearance of most of the Toronto "regulars".

However, the degree of good health found in the sample may also have been due to the early elimination of those unable to cope with the rigours of the life, a process of survival of the fittest. According to the 1961 Census, 19.0 per cent of Toronto adult males were above 60 years of age. Only 9.7 per cent of the C.D.O.s had reached this age. A lower life-expectancy among

C.D.O.s (see Chapter XIII) accounts for at least part of this shrinkage. Also involved may be the institutionalization of some of the men, temporarily or permanently, in homes for the aged, veterans' hospitals, other hospitals or sanatoria, other non-prison settings, or some form of voluntary "retirement". While we cannot assess the extent of this attrition in the chronic drunkenness offender population, it undoubtedly exists, and ill-health is probably one of the selective factors.

This report has shown that their pattern of life is associated with certain illnesses which have occurred more frequently than in the general population.

Tuberculosis has been largely controlled in most sections of our society, but among chronic drunkenness offenders control at best has been only partial. Their unhygienic pattern of living has made them a prey to infection. When they have been admitted to sanatoria they have presented disciplinary problems and frequently have left against advice. Where drug treatment has been incomplete, resistant tubercle bacilli could develop. When the C.D.O.s have been jailed, younger, non-immune prisoners have been exposed to infection. However, it should be emphasized that among the C.D.O.s themselves, repeated exposure seems to have left them able to combat infection sufficiently to carry on their rugged mode of life with a minimum of care.

Other respiratory conditions were also found in significant numbers. Bronchitis was found to be more common than among Chicago Skid Row men and was seen to have been influenced by the duration of heavy drinking. Incomplete care of recurrent chest infections would tend to produce chronic bronchitis and emphysema. The general availability of potent antibiotics has probably saved many of the men from what would have been lethal pneumonia prior to the 1940's.

The large number of epileptics in this population may result, in part, from the downward social mobility to which their disability contributes. Most have had to lie to get employment, which has tended to be in the heavy labour field where they are especially susceptible to danger. Since they may appear to be intoxicated after drinking very little, they have been vulnerable to arrest, and thereafter to increasing involvement in the revolving door pattern. More often than not they were unable or unwilling to obtain medication to prevent seizures or, having obtained it, did not take it regularly.

The subtleties of change in the grey matter responsible for the seizure susceptibility is a mystery. Changes may take place in the frontal lobes of the brain similar to those known to affect learned behaviour patterns. Perhaps the mode of life of homeless epileptics - particularly with respect to trauma, poor diet, and exposure to the elements - has created brain damage which could make their particular pattern of behaviour inevitable. One of the earliest signs of brain damage, evident in senility and toxic states such as pre-coma of hepatic disturbance, is regression of good social behaviour and judgment. However, when we attempted to test the relationship between epilepsy and anti-social behaviour, using convictions for crimes as an index of the latter, the findings ran in the opposite direction. The epileptics proved to have been less likely than others in the sample to have been convicted of an indictable offence ($P < .001$).

Venereal disease was a public health problem presented by chronic drunkenness offenders at an earlier period in their lives. The high incidence of previous infection is known but the data are not available to assess the history of treatment. Penicillin has probably acted as a modifier since no sequelae such as tabes dorsalis or general paresis were found. When these men were younger members of the homeless, unattached population, they seem to have been highly exposed to venereal disease and lack of proper care, which probably made them agents in its spread. But it should be emphasized that after they became full-fledged chronic drunkenness offenders they rarely had anything to do with women.

Cirrhosis of the liver has been classically recognized as a consequence of alcoholism but definite changes confirming cirrhosis were hard to find in our sample. The routine battery of liver function tests used might not have been sensitive enough to detect all liver abnormalities. (The physical difficulties of this study made it inadvisable to carry out more complex biochemical investigations.) Hence, the 3.0 per cent with definite cirrhosis must be regarded as a minimal figure. If we take the 7.4 per cent with definite or probable cirrhosis as the criterion, it is clearly higher than the figure for the general population but almost the same as the estimate for the total chronic alcoholic population.

Brain damage has also been associated in the literature with chronic alcoholism, but the presence of cerebellar damage is often difficult to detect with assurance unless a battery of psychological tests is used. All that we can conclude from the 15.4 per cent suspected cases is that the incidence was most likely higher than in the general population of the same age.

Trauma, particularly from impact with vehicles, was found to be a major hazard in the lives of the chronic drunkenness offenders. Over half of them had suffered fractures at some time, including 14.0 per cent with skull fractures. It is reasonable to suppose that the rate would have been even higher if their sprees had not been involuntarily truncated and spaced because of law enforcement activities.

Another distinguishing characteristic of the men in this sample was that three-quarters of them weighed less than the general male population of the same age. Only 3.0 per cent were judged to be obese in bodily appearance. A correlation between alcoholism and malnutrition might be expected at this social level. However, the finding that the majority of men gain weight in jail supports the conclusion that damage from malnutrition would be greater among them if they were not forced to stop drinking and recuperate at frequent intervals.

It has been suggested to the writer that ordinary alcoholics have a higher incidence of arteriosclerosis and gout, as well as obesity, than the general population.[7] Among the C.D.O.s arteriosclerotic heart disease was within the range found in normal populations and only one case of gout was detected.

Significance might also be attached to the fact that certain diseases which are believed to be influenced by emotional factors - namely, hypertension, peptic ulcers, and arthritis - were found to occur with approximately the same frequency as in the general population. This is supported by the finding of Feeney et al. (18) that psychosomatic disorders were 6 times more common among predominantly middle-class alcoholics attending an out-patient clinic than among alcoholics who were workhouse inmates. The psychological section of the present study uncovered a significant difference between clinically-treated alcoholics and the C.D.O. sample in neuroticism scores as measured by the Maudsley Personality Inventory (see Chapter XIV). The average score of the Toronto clinic patients was 35.8 compared to 26.8 for the C.D.O. sample. (Both, though, were well above the norm of 17.8 for adult males.)

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[7] Personal communication from Dr. H. Surry, Toronto General Hospital.

To the outside observer the chaotic, "scrounging" existence of chronic drunkenness offenders, with its constant hazard of arrest, might appear to be highly stressful; but we must also consider that these men may be escaping many pressures that conventional citizens take for granted. The C.D.O.s do not have to worry about occupational success, struggle with debts, or meet a host of family and civic obligations. Moreover, they probably suffer less than other alcoholics from feelings of guilt about their drinking and the damage it may be causing to others. Since they associate almost entirely with men like themselves, they are protected from much of the guilt-inducing censure that is brought to bear on alcoholics who have persisting emotional ties with non-alcoholic family members, colleagues, and friends. They often asserted,and apparently believed, that they were harming nobody but themselves.

The most important conclusion from the viewpoint of rehabilitation was that most of the men were physically capable of useful labour, although a minority among them would be able to do only light work or tasks especially tailored to their disabilities. A few were barred from useful labour by physical conditions that could have been corrected by treatment. The group that would have to be given permanent domiciliary care for reasons of health numbered no more than 10.0 per cent.

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APPENDIX

THE CHRONIC DRUNKENNESS OFFENDER

Research Reports

1. Introduction: Methodology and Summary of Findings
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Supplement A. Typical Case Histories